

AMENDMENT

S. No.	Clause No. Page No.	For	Read
		percentage shall be multiplied by the factor given below: a) For calculating the : 0.5 pressure at the bottom surface of the bed block: b) For calculating the : 0.5 pressure on the top 3 m of the structure below the bed block decreasing uniformly to zero c) For calculating the : zero pressure on the portion of structure more than 3 m below the bed block	cap, the appropriate impact percentage shall be multiplied by the factor given below: a) For calculating the : 0.5 pressure on the top 3 m of the structure below the abutment cap/piercap decreasing uniformly to zero b) For calculating the : Zero pressure on the portion of structure more than 3 m below the abutment cap/piercap
6	210.3 (Page 41)	Third Line “The maximum velocity for the purpose of this sub-clause shall be assumed to be $\sqrt{2}$ times the maximum mean velocity of the current” Where $\bar{V}$ is the maximum mean velocity	Third Line “The maximum velocity for the purpose of this sub-clause shall be assumed to be $\sqrt{2}$ times the mean velocity of the current” Where, $\bar{V}$ is the mean velocity
7	Annexure B (202.3) (Page 88)	Sr. 1, 2) Snow Load (See note i) Notes i) <i>The snow loads may be based on actual observation or past records in the particular area or local practices, if existing</i> ii) <i>The wave forces shall be determined by suitable analysis considering drawing and inertia forces etc. on single structural members based on rational methods or model studies. In case of group of piles, piers etc., proximity effects shall also be considered</i>	Sr. 1, 2) Snow Load Notes: i) <i>The wave forces shall be determined by suitable analysis considering drawing and inertia forces etc. on single structural members based on rational methods or model studies. In case of group of piles, piers etc., proximity effects shall also be considered</i>

Notification No.14

Amendment No.1/IRC:SP:114/November, 2018 (Effective from 31st January, 2019)

To

IRC:SP:114-2018 “Guidelines for Seismic Design of Road Bridges”

S. No	Clause No./ Page No.	For	Read
1.	4.2.3 (Page 25)	Where, l is the span metres, m is the mass per unit length (N-m), and EI is the flexural rigidity of the superstructure in N-m ² . EI may be estimated for simply supported span as $(l^3/48 \Delta)$, where Δ is deflection of span due unit point load applied on it. The seismic zone factor for vertical ground motions may be taken as two-thirds of that for horizontal motions.	Where, l is the span metres, m is the mass per unit length (N-m), and EI is the flexural rigidity of the superstructure in N-m ² . The spectra for vertical ground motions may be taken as two-thirds of that for horizontal motions.

AMENDMENT

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2.	Fig 4.3 (b) -Add Note below Fig. (Page 33)	--	Note:- In case of Pile foundation, the total hydrodynamic forces calculated based on above formula shall be considered to be equally shared between piles covered within enveloping cylinder.
3.	5.2.1 (Page 34)	Z = Zone factor as given in Table 4.2 (Ground acceleration corresponding to Maximum Considered Earthquake)	Z = Zone factor as given in Table 4.2
4.	5.2.3, Table 5.1 (Page 38) Add Note below the Table 5.1	Table 5.1 Classification of Types of Soils for Determining the Spectrum to be Used to Estimate Design Earthquake Force	Table 5.1 Classification of Types of Soils for Determining the Spectrum to be Used to Estimate Design Earthquake Force Note: -The value of N to be used shall be weighted mean of 'N' of soil layers from existing ground level/ Scour level to '30 m' below ground / Scour level. Here N value of individual layer shall be the corrected value.
5.	5.3.1, General, last line (Page 39)	Depending on the nature of the application and on the information actually available, the description of the seismic motion may be made by using artificial accelerograms and recorded or simulated accelerograms.	Depending on the nature of the application and on the information actually available, the description of the seismic motion may be made by using artificial accelerograms and simulated accelerograms.
6.	5.3.2 heading (Page 39)	5.3.2 Artificial Accelerogram	5.3.2 Spectrum Compatible Time History
7.	5.3.3, Heading and first line (Page 39)	5.3.3 Recorded or Simulated Accelerograms Recorded accelerograms are generated through a physical simulation of source and travel path mechanisms.	5.3.3 Simulated Accelerograms Simulated accelerograms are generated through a physical simulation of source and travel path mechanisms
8.	6.4.3, (ii), (Page 43)	Wherever the fixed bearings are used, they shall be designed for the design seismic action determined through capacity design. Alternatively, linkages shall be used to withstand seismic action.	Wherever the fixed bearings are used, they shall be designed for the design seismic action determined through capacity design, subject to the upper limit of elastic design force considered with $R = 1$. Alternatively, linkages shall be used to withstand seismic action.
9.	8.1, last line (Page 57)	This chapter deals with the earthquake resistant design of regular bridges in which the seismic actions are mainly resisted at abutments or through flexure of piers, that is, bridges comprising of conventional pier-foundation system supporting the deck structure with/without bearings. However for all special and major bridges, detailed dynamic studies should be carried out as mentioned in Chapter 6	This chapter deals with the earthquake resistant design of regular bridges in which the seismic actions are mainly resisted at abutments or through flexure of piers, that is, bridges comprising of conventional pier-foundation system supporting the deck structure with/without bearings.
10.	8.4.6.2, (iv), (Page 62)	iv) For special long span structure such as cable stay & extradosed type bridge foundations, non-linear soil behaviour should be taken into account in determining possible permanent deformation during earthquake	iv) For long span structure beyond 150m span, non-linear soil behaviour should be taken into account in determining possible permanent deformation during earthquake

AMENDMENT

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11.	8.5.2, last sentence, (Page 64)	In seismic zone II & III, the designer is free to exercise his choice of bearing arrangement	Delete this sentence
12.	Appendix A5 (page 131)	ILLUSTRATION OF LIQUEFACTION OF SOIL	ILLUSTRATION OF LIQUEFACTION OF SOIL (Clause 8.4.3)
13.	Appendix -A5 A-5.1.1 (Page 131)	An evaluation of the liquefaction susceptibility should be made when the foundation soils include extended layers or thick loose sand, with or without silt/clay fines, beneath the water table level, and when the water table level is close to the ground surface. To evaluate the liquefaction potential, investigations have to be conducted which include the in- situ Standard Penetration Tests (SPT) [IS 2131-1981] or Cone Penetration Tests (CPT) [IS 4968 (Part 3)-1976], as well as the determination of grain size distribution curves in the laboratory	An evaluation of the liquefaction susceptibility should be made when the foundation soils include extended layers or thick loose sand, with or without silt/clay fines, beneath the water table level. The highest water table shall be adopted that can exist over a long period in a year. To evaluate the liquefaction potential, investigations have to be conducted which include the in- situ Standard Penetration Tests (SPT) [IS 2131-1981] or Cone Penetration Tests (CPT) [IS 4968 (Part 3)-1976], as well as the determination of grain size distribution curves in the laboratory
14.	APPENDIX-A-5 A.5.1.2 (Page 131 & 132)	Where $C_{60} = C_{HT} C_{HW} C_{SS} C_{RL} C_{BD}$ = correction factor for non-standard SPT configurations For SPT conducted as per IS 2131-1981, the energy delivered to the drill rod is about 60 percent and factors C_{60} may be assumed as 1. For non-standard SPT configuration factors C_{HT} , C_{HW} , C_{BD} , C_{RL} and C_{SS} are given below	Where $C_{60} = C_{HT} C_{HW} C_{SS} C_{RL} C_{BD}$ = correction factor Delete this sentence Factors C_{HT} , C_{HW} , C_{BD} , C_{RL} and C_{SS} are given below
15.	APPENDIX-A-5 (Page 135)	a_{max} - Peak ground acceleration (PGA), in terms of g, (shall be taken as per Table 4.2),	a_{max} - Peak ground acceleration (PGA), in terms of g, where g is acceleration due to gravity If value of PGA is not available the ratio a_{max}/g may be taken equal to seismic zone factor (as per Table 4.2),

Notification No.15

Amendment No.1/IRC:83 (Part IV)/November, 2018 (Effective from 31st January, 2019)

To

IRC:83 -2014 (Part IV) “Standard Specifications and Code of Practice for Road Bridges, Section IX – Bearings (Spherical and Cylindrical)”

S. No.	Clause No. Page No.	For	Read
1	5.4.2 (Page 16)	$N_{sd,max} \leq f_k / \gamma_m \cdot A_r \cdot k$	$N_{sd} \leq f_k / \gamma_m \cdot A_r \cdot k$
2	5.4.3.2 (Page 18)	$e_2 = V_{xy, sd} / N_{sd, max} \cdot \mu_{fr} \cdot c$	$e_2 = V_{xy, sd} / N_{sd} \cdot \mu_{fr} \cdot c$
3	5.4.3.4 (Page 19)	$e_4 = V_{xy, sd} / N_{sd, max} \cdot (r + b)$	$e_4 = V_{xy, sd} / N_{sd} \cdot (r + b)$